

 **O.53 - Life cycle assessment of wheat and apple production systems within the ENDURE project**

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Within the ENDURE activity RA3 a goal of the sub-activity RA3.4 is to calculate the environmental impacts of apple and wheat production strategies by life cycle assessment with a focus on pesticide applications. The analysis of production systems includes the actual production from cultivation specifically from the preparation of orchards up to harvesting and finally the uprooting of the orchards, as well as the environmental impacts linked with the production of input factors. For each case study and region two systems with different intensities (integrated and organic production) were analysed. Data was collected by local project partners. The Swiss Agricultural Life Cycle Assessment tool (SALCA) was used for the impact assessment. The impact categories were linked with resource management (non-renewable energy demand, global warming potential), nutrient management (eutrophication and acidification potential) and the human and ecological toxicity were calculated for the functional units ha*year and kg dry matter yield or kg apple. For the analysed systems this study shows some overall advantages of the organic wheat production over the integrated, with the exception of nutrient management where impacts in organic production are not substantially lower. For the analysed apple production strategies the organic production is only advantageous for resource management and the eco- and human toxicity per ha. For all other categories the impacts generated by the integrated production strategies are lower.